

2025 KOREA ENERGY OUTLOOK

H2 2024 Edition



Published by the Korea Energy Economics Institute (KEEI), Energy Outlook takes a closer look at the global energy market and supply and demand trends in domestic energy and examines the outlook for short-term energy demand.

This report outlines the recent changes in the supply and demand of energy and provides important data and policy implications in an effort to contribute to the establishment and adjustment of a series of energy policies by the government.

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1. Energy Consumption Trends

- In the first half of 2024, Total Primary Energy Demand (TPED) rebounded by 2.2% year-on-year, but the recovery was weak.**
 - The recovery of energy consumption was limited due to sluggish production in major energy-intensive industries, energy price hikes, and the temperature effect.
 - Looking at each energy source, consumption of most energy sources except coal increased year-on-year due to base effects.

- Total final consumption (TFC) increased by 2.4% year-on-year, with a decrease in buildings, a flat trend in transportation, and an increase in the industrial sector.**
 - Consumption in the industrial sector increased by 4.2% year-on-year, with an increase in consumption of petrochemicals and machinery amid a general slowdown in manufacturing activity, and consumption in steel remaining at the previous year's level.
 - Energy consumption in the transportation sector increased in the road sector, but decreased in all other sectors, including domestic navigation, domestic aviation, and rail, and remained at the same level as the previous year (0.0%).
 - In the building sector, energy consumption decreased slightly (0.5%) year-on-year due to a decrease in heating degree days and an increase in energy prices for civilian use.

Energy Consumption Trends and Demand Outlook

	2023p			2024e			2025e		
	1H	2H		1H	2H		1H	2H	
Total Primary Energy Demand									
Coal (Mton)	58.2	61.4	119.6	53.8	58.7	112.5	51.9	56.8	108.7
	(-3.2)	(-4.4)	(-3.8)	(-7.6)	(-4.4)	(-6.0)	(-3.6)	(-3.2)	(-3.4)
Oil (Mbbl)	384.8	392.3	777.1	401.4	393.3	794.7	396.9	400.2	797.2
	(-5.2)	(-3.4)	(-4.3)	(4.3)	(0.2)	(2.3)	(-1.1)	(1.8)	(0.3)
Gas (Mtoe)	30.3	27.3	57.6	32.0	29.7	61.7	33.4	30.3	63.7
	(-6.0)	(0.7)	(-3.0)	(5.5)	(8.6)	(7.0)	(4.4)	(2.1)	(3.3)
Nuclear (TWh)	86.7	93.8	180.5	91.0	99.0	190.0	94.0	100.6	194.5
	(-0.0)	(5.0)	(2.5)	(5.0)	(5.5)	(5.2)	(3.3)	(1.6)	(2.4)
Renewable & Others (Mtoe)	8.6	9.1	17.7	9.4	9.8	19.1	10.0	10.2	20.2
	(1.8)	(10.7)	(6.2)	(8.8)	(7.7)	(8.2)	(6.1)	(4.6)	(5.3)
Total (Mtoe)	150.8	153.5	304.3	154.1	156.4	310.5	154.7	157.3	312.0
	(-3.3)	(-0.3)	(-1.8)	(2.2)	(1.9)	(2.0)	(0.4)	(0.6)	(0.5)
Total Final Consumption									
Coal (Mton)	23.6	24.0	47.6	23.0	23.6	46.5	23.0	22.9	45.9
	(-4.4)	(1.4)	(-1.5)	(-2.5)	(-1.9)	(-2.2)	(0.3)	(-3.0)	(-1.4)
Oil (Mbbl)	379.1	387.1	766.2	398.5	389.2	787.7	392.5	395.0	787.5
	(-5.1)	(-3.0)	(-4.1)	(5.1)	(0.6)	(2.8)	(-1.5)	(1.5)	(-0.0)
Gas (Mtoe)	14.1	10.8	24.9	14.8	11.3	26.1	15.3	11.6	27.0
	(-6.6)	(-0.3)	(-3.9)	(4.8)	(4.2)	(4.5)	(3.9)	(3.1)	(3.5)
Electricity (TWh)	264.3	270.4	534.7	262.0	276.7	538.7	265.0	276.7	541.6
	(-0.6)	(0.3)	(-0.1)	(-0.9)	(2.3)	(0.8)	(1.1)	(-0.0)	(0.5)
Heat (Mtoe)	1.6	1.2	2.8	1.5	1.1	2.6	1.6	1.1	2.7
	(-7.0)	(-1.2)	(-4.6)	(-5.2)	(-8.7)	(-6.7)	(1.6)	(1.5)	(1.6)
Renewable & Others (Mtoe)	3.5	3.9	7.4	3.8	4.1	7.9	4.0	4.2	8.2
	(-8.7)	(12.1)	(1.2)	(8.7)	(5.9)	(7.3)	(5.8)	(1.4)	(3.5)
Total (Mtoe)	104.8	103.4	208.2	107.3	104.3	211.6	107.5	104.8	212.3
	(-4.2)	(-0.8)	(-2.5)	(2.4)	(0.9)	(1.6)	(0.1)	(0.5)	(0.3)
Industry	62.7	63.8	126.4	65.3	64.7	130.0	65.1	64.8	129.9
	(-5.2)	(0.5)	(-2.4)	(4.2)	(1.5)	(2.9)	(-0.3)	(0.1)	(-0.1)
Transport	17.4	17.9	35.3	17.4	17.5	35.0	17.3	17.9	35.2
	(1.2)	(-6.2)	(-2.7)	(0.0)	(-2.0)	(-1.0)	(-0.7)	(2.3)	(0.8)
Buildings*	24.7	21.7	46.4	24.6	22.0	46.6	25.0	22.1	47.1
	(-5.2)	(0.3)	(-2.7)	(-0.5)	(1.2)	(0.3)	(1.8)	(0.4)	(1.1)

* Buildings is the sum of Residential, Commercial, and Public Services

2. Energy Demand Outlook

- **Total Primary Energy Demand is expected to increase by 2.0% in 2024 and 0.5% in 2025, reaching 312.0 million toe.**
 - TPED is expected to increase in 2024, mainly in the industrial sector, but the growth rate is expected to slow down in 2025 due to the delayed economic recovery, mainly in energy-intensive industries.
 - The energy intensity (toe/KRW 100 million) is expected to remain at the previous year's level in 2024 as energy demand rebounds due to base effects, but the improvement in energy intensity is expected to accelerate again in 2025 as energy demand stagnates due to a delay in the recovery of production in energy-intensive industries.

- **The downward trend in coal demand is expected to ease in 2025, while the growth of other energy sources is expected to slow down.**
 - Oil demand is expected to increase by 2.3% in 2024 due to the base effect, mainly for industrial feedstock, but in 2025, it is expected to increase only slightly (0.3%) due to the delay in the recovery of the petrochemical industry.
 - Coal demand will decline in both the power generation and industrial sectors during the forecast period, falling by 6.0% in 2024 and easing in 2025, but continuing to decline by 3.4%.
 - Nuclear power generation is expected to increase by 5.3% and 2.4% in 2024 and 2025, respectively, due to the impact of new nuclear power plants entering the market.
 - Natural gas demand is expected to increase by 6.2% in 2024 and 4.4% in 2025, as the growth in demand for gas manufacturing is expected to expand, but the growth in demand for power generation is expected to slow down.
 - Electricity demand in the final consumption sector is expected to slow down from 0.8% growth in 2024 to 0.5% growth in 2025 due to the delayed recovery of electricity-intensive industries.

- **The growth rate of total final consumption is expected to slow down from 1.6% in 2024 to 0.3% in 2025.**
 - The energy demand in the industrial sector is expected to increase by 2.9% in 2024 due to the base effect despite the recession in the manufacturing industry, but in 2025, it is expected to slightly fall short of the previous year's level (-0.1%) due to the continued sluggishness in the steel and petrochemical industries.

- In the transportation sector, energy demand is expected to decrease by 1.0% in 2024 due to sluggish demand for freight transport due to the economic slowdown, but is expected to turn to a slight increase (0.8%) in 2025 as the economy recovers somewhat in the second half of the year.
- Energy demand in the building sector is expected to increase by 0.3% year-on-year in 2024, mainly for cooling, and by 1.1% in 2025, mainly for heating.

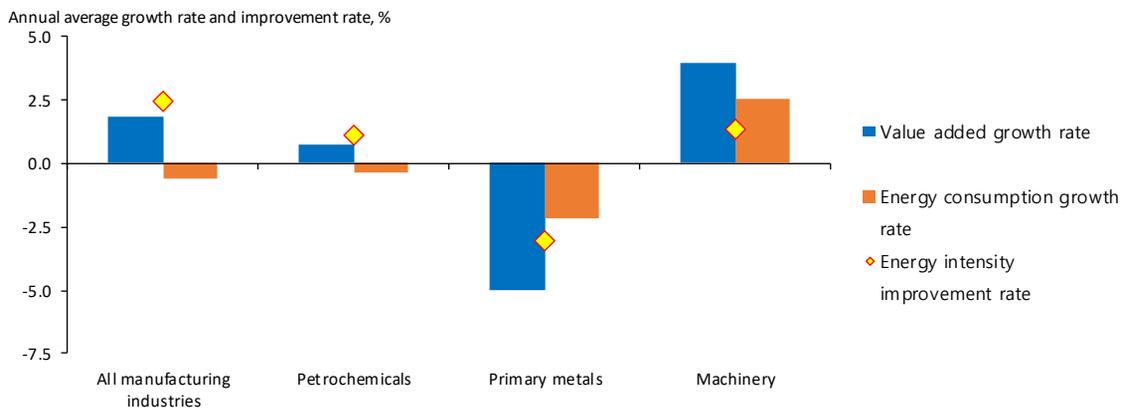
3. Key Features and Implications

Decoupling of economic growth and energy consumption in the industrial sector

□ While the added value of the manufacturing industry has increased, energy consumption has decreased, resulting in a decoupling of economic growth and energy consumption.

- In the last five years (2018-2023), the Korean economy has grown at an annual average rate of 2.1%. Despite the relatively sluggish manufacturing industry compared to the past, the manufacturing industry, along with the service industry, plays a major role in economic growth.

Figure 3.1 Value added, energy consumption growth rate, and energy intensity improvement rate for the period 2018-2023



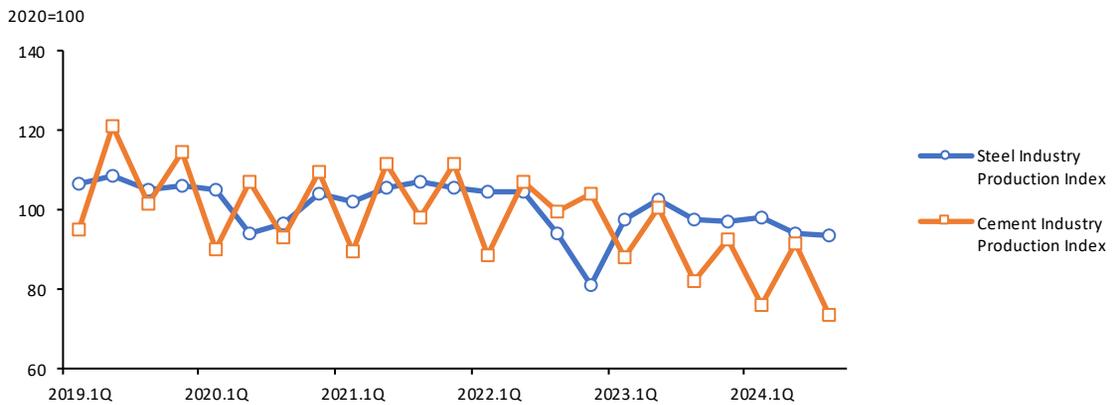
Note: Primary metals are the sum of steel and non-ferrous metals. Energy intensity is energy consumption per unit of added value.

- Contrary to the increase in added value, energy consumption in the manufacturing industry as a whole has decreased over the past five years, which is the main reason for the slowdown in the growth of energy consumption in the country as a whole compared to economic growth.
- The outlook for the domestic manufacturing industry over the next five years is expected to follow the trend of the past five years, with growth centered on machinery, especially semiconductors, rather than petrochemicals or primary metals. This means that the manufacturing industry's energy intensity will continue to improve and the decoupling of economic growth and industrial energy consumption will continue.

Coal demand in the steel and cement industries will continue to be sluggish.

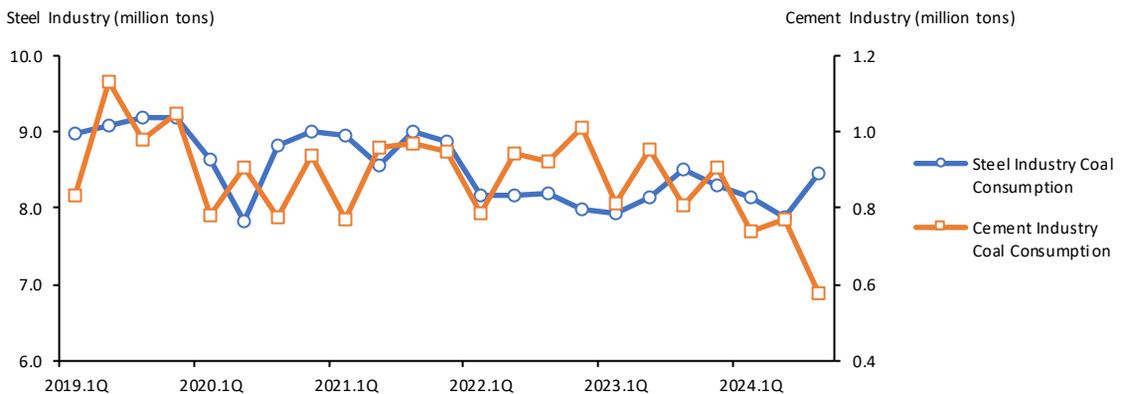
- **Due to the downturn in the business environment, coal consumption in the steel and cement industries, which are coal-intensive industries, has shrunk significantly.**
 - Coal consumption in the steel industry peaked in the second quarter of 2018 and has been on a downward trend until the third quarter of 2024 due to sluggish production activity.
 - The coal consumption of the cement industry, which is highly dependent on domestic demand, has been declining rapidly since 2019 due to the sluggish domestic construction market and a decline in production activities.

Figure 3.2 Production Index Trends by Industry



Source: Korea Iron and Steel Association, Bank of Korea

Figure 3.3 Coal Consumption Trends by Industry



Source: Korea Energy Economics Institute

- **Steel industry coal consumption will remain at the same level as in 2025, but cement industry consumption is expected to continue to decline in 2025.**

- In 2025, steel production will shrink due to a decrease in production in the major demand industries, such as automobiles and shipbuilding, compared to 2024, but it is expected to remain at the same level as in 2024 due to increased exports to emerging countries (India, ASEAN, etc.) and Europe. (Korea Institute for Industrial Economics & Trade 2024.11.25.)
- Construction investment in 2025 is expected to continue the sluggish trend of 2024 due to the cumulative sluggishness of construction-related leading indicators (construction start-up area) and the government's reduction in the SOC budget (-3.6% year-on-year) despite positive factors such as interest rate cuts and a recovery in the real estate market. (Korea Institute for Industrial Economics & Trade 2024.11.25.)

Changes in transportation policy and the number of registered cars

- The government's policy on LPG vehicles has changed, and the decline in the number of LPG vehicles will be significantly eased by 2024.**
 - The number of LPG vehicles registered and the consumption of LPG in the transportation sector have been declining continuously, but in 2024, the discontinuation of existing diesel trucks and the launch of new LPG 1-ton trucks will significantly ease the decline in the number of LPG vehicles registered.
 - There is a movement to increase the number of LPG vehicle registrations and increase LPG demand as a substitute for diesel vehicles, but in the long term, the number of LPG vehicles is expected to decrease as the government strengthens its support system for the purchase of eco-friendly vehicles.
- The rate of increase in the number of registered electric vehicles, which has been growing rapidly recently, is slowing down, and the number of diesel vehicles is continuing to decrease.**
 - The number of new sales and registrations of electric vehicles is still increasing, but the rate of increase is slowing down.
 - The number of diesel-powered vehicles registered has continued to decline as diesel vehicle reduction policies have been implemented.

Table 3.1 Number of vehicles registered by fuel type in Korea (as of October)

	2020.10	2021.10	2022.10	2023.10	2024.10
Number of registered vehicles	24,251	24,811	25,403	25,870	26,233
(thousands)	(2.8)	(2.3)	(2.4)	(1.8)	(1.4)
- Gasoline vehicles	11,343	11,703	12,013	12,291	12,412
	(4.1)	(3.2)	(2.7)	(2.3)	(1.0)
- Diesel vehicles	9,992	9,888	9,780	9,541	9,164
	(0.2)	(-1.0)	(-1.1)	(-2.4)	(-3.9)
- LPG vehicles	1,988	1,951	1,914	1,841	1,851
	(-0.9)	(-1.9)	(-1.9)	(-3.8)	(0.5)
- Hybrid vehicles	606	830	1,072	1,404	1,853
	(29.9)	(36.9)	(29.1)	(31.0)	(32.0)
- Electric vehicle	128	212	366	516	661
	(54.4)	(65.0)	(72.7)	(41.1)	(28.2)

Source: Ministry of Land, Infrastructure and Transport

Note 1: The figures in parentheses are the year-on-year growth rates

Note 2: The latest available data for 2024 is October, so the data for the previous October is presented for comparison

The Main Indicator and Energy Outlook Result

Main Economic and Energy Indicators

	2021	2022p	2023e		2024e				2025e
			1H	2H	1H	2H			
Economy and Population									
GDP (trillion won)	2 153.4	2 212.2	1 091.5	1 151.7	2 243.2	1 121.7	1 169.8	2 291.5	2 334.1
Industrial Production (2020=100)	108.5	109.6	104.0	109.6	106.8	109.5	110.1	109.8	111.8
Crude Oil Price (Dubai, USD/bbl)	69.3	96.4	79.1	85.1	82.1	83.3	76.0	79.6	72.3
Working Days	273.5	272.5	136.5	137.0	273.5	134.5	137.0	271.5	273.5
Population (million)	51.8	51.7	51.7	51.7	51.7	51.8	51.8	51.8	51.7
Average Temperature (°C)	13.3	13.0	10.8	16.6	13.7	11.2	17.7	14.5	13.4
Cooling Degree days	101.3	141.9	2.6	131.0	133.6	5.7	237.8	243.5	112.7
Heating Degree days	2 404.7	2 567.1	1 458.0	889.8	2 347.8	1 402.7	813.2	2 215.9	2 391.9
Energy Indicators									
Total Primary Energy Demand (Mtoe)	308.3	309.9	150.8	153.5	304.3	154.1	156.4	310.5	312.0
Energy Intensity (toe/million won)	0.143	0.140	0.139	0.133	0.136	0.138	0.134	0.136	0.134
TPED/capita (toe/capita)	5.954	5.997	2.916	2.969	5.884	2.978	3.022	6.000	6.036
Electricity Generation (TWh)	572.7	590.5	284.6	299.8	584.4	285.2	310.4	595.6	597.1
Electricity Generation per capita (MWh)	11.1	11.4	5.5	5.8	11.3	5.5	6.0	11.5	11.6
Electricity Demand per capita (MWh)	10.1	10.4	5.1	5.2	10.3	5.1	5.3	10.4	10.5

Energy Demand

	2021	2022p	2023e		2024e		2025e		
			1H	2H	1H	2H			
Total Primary Energy Demand									
Coal (Mton)	129.0	124.3	58.2	61.4	119.6	53.8	58.7	112.5	108.7
Oil (Mtbl)	827.8	811.9	384.8	392.3	777.1	401.4	393.3	794.7	797.2
Natural gas (Mton)	45.8	45.4	22.7	21.2	43.9	24.1	22.6	46.7	48.7
Nuclear (TWh)	158.0	176.1	86.7	93.8	180.5	91.0	99.0	190.0	194.5
Renewable & Others (Mtoe)	15.0	16.7	8.6	9.1	17.7	9.4	9.8	19.1	20.2
Total (Mtoe)	308.3	309.9	150.8	153.5	304.3	154.1	156.4	310.5	312.0
Coal	78.2	75.1	35.3	37.2	72.5	32.7	35.6	68.3	66.1
Oil	121.3	121.1	58.1	59.9	118.0	60.7	60.2	120.9	120.5
Gas (Natural + City)	60.1	59.4	30.3	27.3	57.6	32.0	29.7	61.7	63.7
Nuclear	33.7	37.5	18.5	20.0	38.4	19.4	21.1	40.5	41.4
Renewable & Others	15.0	16.7	8.6	9.1	17.7	9.4	9.8	19.1	20.2
Total Final Consumption									
Coal (Mton)	53.8	48.3	23.6	24.0	47.6	23.0	23.6	46.5	45.9
Oil (Mtbl)	809.1	798.9	379.1	387.1	766.2	398.5	389.2	787.7	787.5
Natural gas (Mton)	1.6	1.6	1.0	1.2	2.2	1.5	1.8	3.3	3.8
City gas (Bm ³)	22.7	23.4	12.6	9.1	21.7	12.5	8.8	21.3	21.6
Electricity (TWh)	520.3	535.4	264.3	270.4	534.7	262.0	276.7	538.7	541.6
Heat (Mtoe)	2.7	2.9	1.6	1.2	2.8	1.5	1.1	2.6	2.7
Renewable & Others (Mtoe)	7.1	7.3	3.5	3.9	7.4	3.8	4.1	7.9	8.2
Total (Mtoe)	216.2	213.6	104.8	103.4	208.2	107.3	104.3	211.6	212.3
Coal	33.9	30.8	15.1	15.4	30.5	14.7	15.1	29.9	29.5
Oil	102.3	100.5	47.8	48.8	96.6	50.0	48.8	98.8	98.4
Gas (Natural + City)	25.5	26.0	14.1	10.8	24.9	14.8	11.3	26.1	27.0
Electricity	44.7	46.0	22.7	23.3	46.0	22.5	23.8	46.3	46.6
Heat	2.7	2.9	1.6	1.2	2.8	1.5	1.1	2.6	2.7
Renewable & Others	7.1	7.3	3.5	3.9	7.4	3.8	4.1	7.9	8.2
Industry	133.5	129.6	62.7	63.8	126.4	65.3	64.7	130.0	129.9
Transport	36.6	36.3	17.4	17.9	35.3	17.4	17.5	35.0	35.2
Buildings	46.1	47.7	24.7	21.7	46.4	24.6	22.0	46.6	47.1

Energy Demand

(yoy, %)

	2021	2022p	2023e		2024e		2025e		
			1H	2H	1H	2H			
Total Primary Energy Demand									
Coal (Mton)	3.0	-3.6	-3.2	-4.4	-3.8	-7.6	-4.4	-6.0	-3.4
Oil (Mtbl)	7.3	-1.9	-5.2	-3.4	-4.3	4.3	0.2	2.3	0.3
Natural gas (Mton)	10.4	-0.7	-6.5	0.2	-3.4	6.1	6.3	6.2	4.4
Nuclear (TWh)	-1.4	11.4	-0.0	5.0	2.5	5.0	5.5	5.2	2.4
Renewable & Others (Mtoe)	11.7	10.9	1.8	10.7	6.2	8.8	7.7	8.2	5.3
Total (Mtoe)	5.8	0.5	-3.3	-0.3	-1.8	2.2	1.9	2.0	0.5
Coal	3.0	-3.9	-3.0	-4.0	-3.5	-7.4	-4.3	-5.8	-3.2
Oil	7.1	-0.1	-3.8	-1.5	-2.6	4.5	0.5	2.5	-0.3
Gas (Natural + City)	10.1	-1.2	-6.0	0.7	-3.0	5.5	8.6	7.0	3.3
Nuclear	-1.4	11.4	-0.0	5.0	2.5	5.0	5.5	5.2	2.4
Renewable & Others	11.7	10.9	1.8	10.7	6.2	8.8	7.7	8.2	5.3
Total Final Consumption									
Coal (Mton)	4.9	-10.2	-4.4	1.4	-1.5	-2.5	-1.9	-2.2	-1.4
Oil (Mtbl)	7.6	-1.3	-5.1	-3.0	-4.1	5.1	0.6	2.8	-0.0
Natural gas (Mton)	0.9	1.0	20.6	46.1	33.4	57.8	51.1	54.1	13.0
City gas (Bm ³)	3.3	2.9	-8.6	-5.3	-7.3	-0.5	-3.7	-1.8	1.6
Electricity (TWh)	4.7	2.9	-0.6	0.3	-0.1	-0.9	2.3	0.8	0.5
Heat (Mtoe)	4.2	9.1	-7.0	-1.2	-4.6	-5.2	-8.7	-6.7	1.6
Renewable & Others (Mtoe)	7.1	1.7	-8.7	12.1	1.2	8.7	5.9	7.3	3.5
Total (Mtoe)	6.0	-1.2	-4.2	-0.8	-2.5	2.4	0.9	1.6	0.3
Coal	4.7	-9.1	-3.9	1.8	-1.1	-2.3	-1.8	-2.0	-1.2
Oil	7.8	-1.7	-4.8	-3.0	-3.9	4.6	0.1	2.3	-0.4
Gas (Natural + City)	3.1	1.9	-6.6	-0.3	-3.9	4.8	4.2	4.5	3.5
Electricity	4.7	2.9	-0.6	0.3	-0.1	-0.9	2.3	0.8	0.5
Heat	4.2	9.1	-7.0	-1.2	-4.6	-5.2	-8.7	-6.7	1.6
Renewable & Others	7.1	1.7	-8.7	12.1	1.2	8.7	5.9	7.3	3.5
Industry	7.5	-3.0	-5.2	0.5	-2.4	4.2	1.5	2.9	-0.1
Transport	5.4	-0.9	1.2	-6.2	-2.7	0.0	-2.0	-1.0	0.8
Buildings	2.4	3.6	-5.2	0.3	-2.7	-0.5	1.2	0.3	1.1

Transformation

(Mtoe)

	2021	2022p	2023e		2024e		2025e		
			1H	2H	1H	2H			
Transformation*	80.1	84.7	40.9	43.9	84.7	40.6	45.3	85.9	86.9
Coal	44.3	44.3	20.2	21.8	42.0	17.9	20.5	38.4	36.6
Oil**	15.3	16.8	8.4	9.2	17.6	8.7	9.4	18.1	18.2
Gas (Natural + City)	31.3	30.6	14.8	14.7	29.5	15.3	16.6	31.9	33.0
Nuclear	33.7	37.5	18.5	20.0	38.4	19.4	21.1	40.5	41.4
Renewable & Others	7.9	9.4	5.2	5.2	10.3	5.6	5.6	11.3	12.0
Heat	- 3.0	- 3.2	- 1.6	- 1.2	- 2.8	- 1.8	- 1.2	- 3.0	- 2.9
Electricity	- 49.3	- 50.8	- 24.5	- 25.8	- 50.3	- 24.5	- 26.7	- 51.2	- 51.4
Power generation (including CHP)	66.5	69.2	33.3	35.3	68.6	32.5	36.4	68.9	69.1
Coal	44.3	44.3	20.2	21.8	42.0	17.9	20.5	38.4	36.6
Oil	0.6	0.6	0.3	0.2	0.4	0.2	0.2	0.4	0.3
Gas (Natural + City)	30.7	30.0	14.4	14.1	28.5	14.6	15.6	30.2	30.4
Nuclear	33.7	37.5	18.5	20.0	38.4	19.4	21.1	40.5	41.4
Renewable & Others	9.3	10.4	5.8	6.1	11.8	6.6	6.7	13.3	14.4
Heat	- 2.8	- 2.8	- 1.3	- 1.0	- 2.4	- 1.7	- 1.0	- 2.6	- 2.6
Electricity	- 49.3	- 50.8	- 24.5	- 25.8	- 50.3	- 24.5	- 26.7	- 51.2	- 51.4
District heating	0.3	0.3	0.1	0.0	0.1	0.1	0.0	0.1	0.1
Oil	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.2
Gas (Natural + City)	0.3	0.4	0.2	0.1	0.3	0.2	0.1	0.3	0.3
Renewable & Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heat	- 0.2	- 0.3	- 0.3	- 0.2	- 0.4	- 0.2	- 0.2	- 0.4	- 0.4
Gas manufacturing	-								
Oil	0.2	0.3	0.2	0.1	0.3	0.1	0.0	0.1	0.1
Natural gas	25.0	25.7	12.9	10.8	23.7	13.5	10.2	23.8	25.6
City gas	- 25.1	- 26.0	- 13.1	- 10.8	- 24.0	- 13.6	- 10.3	- 23.9	- 25.8
Petroleum Products Production	14.3	15.6	7.8	8.9	16.7	8.4	9.1	17.4	17.6
Crude oil & refinery feedstocks	164.8	177.0	86.6	90.0	176.6	90.3	93.3	183.7	182.9
Petroleum	- 150.4	- 161.3	- 78.8	- 81.1	- 159.9	- 82.0	- 84.3	- 166.2	- 165.2

* Transformation refers to the transformation of primary or secondary energy products into other secondary energy products through physical or chemical methods. A positive value indicates the amount of fuel or raw materials input into the transformation process, while a negative value indicates the amount of secondary energy products produced.

** Sum of crude oil, refinery feedstocks, and petroleum

Total final consumption

(Mtoe)

	2021	2022p	2023e			2024e			2025e
			1H	2H		1H	2H		
Industry	133.5	129.6	62.7	63.8	126.4	65.3	64.7	130.0	129.9
Coal	33.7	30.6	15.0	15.3	30.3	14.7	15.0	29.7	29.4
Oil	62.3	61.0	28.8	29.6	58.3	31.0	30.1	61.1	60.5
Gas (Natural + City)	10.0	9.9	5.0	5.0	10.0	5.8	5.7	11.5	12.0
Electricity	23.2	23.6	11.6	11.5	23.1	11.3	11.4	22.7	22.8
Heat	-	-	-	-	-	-	-	-	-
Renewable & Others	4.4	4.5	2.2	2.4	4.6	2.5	2.5	5.0	5.2
Transport	36.6	36.3	17.4	17.9	35.3	17.4	17.5	35.0	35.2
Coal	-	-	-	-	-	-	-	-	-
Oil	34.6	34.2	16.4	16.8	33.2	16.4	16.4	32.8	33.0
Gas (Natural + City)	1.1	1.0	0.5	0.5	1.0	0.5	0.5	0.9	0.9
Electricity	0.3	0.3	0.2	0.2	0.4	0.2	0.2	0.5	0.5
Heat	-	-	-	-	-	-	-	-	-
Renewable & Others	0.7	0.7	0.3	0.4	0.7	0.4	0.4	0.8	0.8
Buildings*	46.1	47.7	24.7	21.7	46.4	24.6	22.0	46.6	47.1
Coal	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1
Oil	5.4	5.3	2.6	2.4	5.0	2.6	2.4	4.9	4.8
Gas (Natural + City)	14.5	15.0	8.6	5.3	13.9	8.5	5.1	13.6	14.0
Electricity	21.2	22.1	11.0	11.5	22.5	11.0	12.2	23.1	23.2
Heat	2.7	2.9	1.6	1.2	2.8	1.5	1.1	2.6	2.7
Renewable & Others	2.0	2.1	0.9	1.1	2.0	0.9	1.2	2.1	2.2

* include residential, commercial, public-etc usage

Coal

(Mton)

	2021	2022p	2023e			2024e			2025e
			1H	2H		1H	2H		
Total Coal Demand	129.0	124.3	58.2	61.4	119.6	53.8	58.7	112.5	108.7
Transformation	75.2	76.0	34.7	37.4	72.0	30.8	35.1	65.9	62.7
Power Generation	75.2	76.0	34.7	37.4	72.0	30.8	35.1	65.9	62.7
Heat	-	-	-	-	-	-	-	-	-
Gas Manufacture	-	-	-	-	-	-	-	-	-
Oil Refinery	-	-	-	-	-	-	-	-	-
Total Final Consumption	53.8	48.3	23.6	24.0	47.6	23.0	23.6	46.5	45.9
Industry	53.4	47.9	23.4	23.8	47.2	22.8	23.4	46.2	45.6
Transport	-	-	-	-	-	-	-	-	-
Buildings	0.4	0.4	0.1	0.2	0.4	0.1	0.2	0.4	0.3
Consumption by products									
Anthracite	7.3	6.2	2.6	2.8	5.4	2.5	3.0	5.5	5.2
Bituminous	121.7	118.1	55.6	58.6	114.2	51.3	55.6	106.9	103.5
Iron making	34.1	31.4	15.5	16.2	31.8	15.5	16.2	31.6	31.7
Power Generation	74.3	75.1	34.2	36.9	71.1	30.3	34.6	65.0	62.0

Oil

(Mbbbl)

	2021	2022p	2023e			2024e			2025e
			1H	2H		1H	2H		
Total Oil Demand	827.8	811.9	384.8	392.3	777.1	401.4	393.3	794.7	797.2
Crude Oil & Refinery Feedstocks	1 089.1	1 155.9	565.8	584.2	1 150.1	588.3	605.8	1 194.1	1 188.5
Transformation	1 089.1	1 155.4	565.5	584.1	1 149.6	588.1	605.7	1 193.9	1 188.2
Oil Refinery	1 089.1	1 155.4	565.5	584.1	1 149.6	588.1	605.7	1 193.9	1 188.2
Petroleum products	- 261.3	- 344.0	- 181.1	- 191.9	- 373.0	- 186.9	- 212.5	- 399.4	- 391.3
Transformation	-1 105.8	-1 179.2	- 578.2	- 597.5	- 1 175.7	- 604.8	- 622.0	- 1 226.8	- 1 220.3
Power Generation	4.2	5.0	1.8	1.4	3.2	1.2	1.7	2.9	2.2
Heat	1.8	1.7	0.8	0.5	1.4	0.6	0.6	1.2	1.2
Gas Manufacture	1.7	3.4	2.0	0.7	2.7	1.1	0.3	1.4	0.9
Oil Refinery*	-1 113.4	-1 189.4	- 582.9	- 600.1	- 1 183.0	- 607.7	- 624.7	- 1 232.4	- 1 224.6
Total Final Consumption	809.1	798.9	379.1	387.1	766.2	398.5	389.2	787.7	787.5
Industry	505.8	496.9	233.7	240.0	473.7	253.3	245.6	498.9	497.6
Transport	259.0	258.0	123.6	127.1	250.7	123.7	124.1	247.8	249.7
Buildings	44.2	44.0	21.7	20.0	41.8	21.5	19.5	41.0	40.3
Consumption by products									
Gasoline	84.9	88.4	43.0	47.4	90.4	46.5	48.4	94.9	98.5
Diesel	156.3	151.8	74.6	75.9	150.4	73.6	71.6	145.2	142.5
Kerosene	16.5	15.4	6.8	6.3	13.1	6.5	5.9	12.4	12.0
B-C	6.4	6.7	3.6	3.3	6.9	3.1	2.6	5.6	5.4
Jet Oil	15.5	15.6	6.2	3.3	9.5	3.4	3.4	6.7	6.9
LPG	109.2	115.3	52.1	55.4	107.6	62.8	56.0	118.8	115.9
Petrochem feedstock	47.3	56.6	22.8	25.6	48.4	33.3	27.3	60.6	57.4
Naphtha	369.9	356.0	169.1	168.7	337.8	177.7	176.0	353.7	355.0
Refinery gas	9.0	9.3	4.3	4.8	9.0	3.3	4.1	7.3	8.6
Other Non-Energy	41.3	40.5	19.4	22.1	41.5	21.6	21.4	43.1	42.7

* Oil refinery is a process of manufacturing petroleum products by refining crude oil, and a negative (-) value means the production of petroleum products.

Gas

	2021	2022p	2023e		2024e		2025e		
			1H	2H	1H	2H	1H	2H	
Natural Gas Demand (Mton)	45.8	45.4	22.7	21.2	43.9	24.1	22.6	46.7	48.7
Transformation	42.4	42.3	20.8	18.9	39.7	21.4	19.7	41.1	42.6
Power Generation	23.2	22.7	10.9	10.7	21.6	11.0	11.8	22.9	23.0
Heat	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0
Gas Manufacture*	19.1	19.6	9.9	8.2	18.1	10.3	7.8	18.2	19.6
Oil Refinery	-	-	-	-	-	-	-	-	-
Total Final Consumption	1.6	1.6	1.0	1.2	2.2	1.5	1.8	3.3	3.8
Industry	1.6	1.6	1.0	1.2	2.2	1.5	1.8	3.3	3.8
City Gas Demand (Bm³)	22.7	23.4	12.6	9.1	21.7	12.5	8.8	21.3	21.6
Transformation	- 23.3	- 24.3	- 12.2	- 9.9	- 22.1	- 12.4	- 8.9	- 21.4	- 22.3
Power Generation	0.3	0.3	0.1	0.1	0.3	0.2	0.1	0.3	0.3
Heat	0.3	0.4	0.2	0.1	0.3	0.2	0.1	0.3	0.3
Gas Manufacture*	- 24.4	- 25.5	- 12.9	- 10.6	- 23.5	- 13.4	- 10.1	- 23.5	- 25.3
Oil Refinery	-	-	-	-	-	-	-	-	-
Total Final Consumption	22.7	23.4	12.6	9.1	21.7	12.5	8.8	21.3	21.6
Industry	7.6	7.6	3.7	3.4	7.1	3.7	3.3	7.0	7.0
Transport	1.0	1.0	0.5	0.5	1.0	0.5	0.5	0.9	0.9
Buildings	14.1	14.7	8.4	5.2	13.7	8.4	5.0	13.4	13.8

* Gas manufacture is the process of evaporating natural gas and controlling the amount of heat to supply city gas, and a negative (-) value means the production of city gas.

Electricity

	2021	2022p	2023e		2024e		2025e		
			1H	2H	1H	2H	1H	2H	
Net Electricity Demand	572.7	590.5	284.6	299.8	584.4	285.2	310.4	595.6	597.1
Own use and Losses	53.0	55.5	20.5	29.3	49.8	23.2	33.8	56.9	55.5
Total Final Consumption	520.3	535.4	264.3	270.4	534.7	262.0	276.7	538.7	541.6
Industry	269.6	274.1	134.7	133.8	268.5	131.9	132.5	264.3	265.5
Transport	3.7	4.1	2.2	2.5	4.7	2.6	2.9	5.4	6.1
Buildings	247.1	257.2	127.4	134.1	261.5	127.6	141.3	268.9	270.0
Installed Electrical Capacity (GW)*	129.3	133.3	136.3	139.7	139.7	144.0	148.0	148.0	151.9
Coal	37.3	37.7	38.6	38.6	38.6	39.6	40.6	40.6	39.6
Oil	2.2	0.9	0.9	0.9	0.9	0.6	0.6	0.6	0.6
Gas	41.2	41.2	41.7	43.2	43.2	43.9	45.1	45.1	47.1
Nuclear	23.3	24.7	24.7	24.7	24.7	26.1	26.1	26.1	26.2
Renewable & Others	25.4	28.9	30.5	32.4	32.4	33.8	35.6	35.6	38.3
Electricity Generation of Power Plants*	572.7	590.5	284.6	299.8	584.4	285.2	310.4	595.6	597.1
Coal	197.6	193.2	88.4	96.5	184.9	79.0	90.1	169.0	159.7
Oil	2.4	2.0	0.9	0.6	1.5	0.6	0.5	1.1	0.9
Gas	168.4	163.6	79.2	78.5	157.7	80.8	87.1	167.9	169.0
Nuclear	158.0	176.1	86.7	93.8	180.5	91.0	99.0	190.0	194.5
Renewable & Others	46.4	55.7	29.4	30.3	59.7	33.8	33.8	67.5	73.0
Fuel Consumption of Power Plants (Mtoe)*	118.6	122.9	59.1	62.2	121.3	58.7	64.1	122.8	123.2
Coal	44.3	44.3	20.2	21.8	42.0	17.9	20.5	38.4	36.6
Oil	0.6	0.6	0.3	0.2	0.4	0.2	0.2	0.4	0.3
Gas	30.7	30.0	14.4	14.1	28.5	14.6	15.6	30.2	30.4
Nuclear	33.7	37.5	18.5	20.0	38.4	19.4	21.1	40.5	41.4
Renewable & Others	9.3	10.4	5.8	6.1	11.8	6.6	6.7	13.3	14.4

* Exclude pumped storage. District Heat is classified by fuel type since 2014

Heat and Renewables

(Mtoe)

	2021	2022p	2023e			2024e			2025e
			1H	2H		1H	2H		
Net Heat Demand	3.2	3.3	1.7	1.3	3.0	1.9	1.2	3.1	3.1
Own use and Losses	0.4	0.3	0.0	0.1	0.1	0.4	0.1	0.4	0.4
Total Final Consumption	2.7	2.9	1.6	1.2	2.8	1.5	1.1	2.6	2.7
Industry	-	-	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-	-	-
Buildings	2.7	2.9	1.6	1.2	2.8	1.5	1.1	2.6	2.7
Renewables	15.0	16.7	8.6	9.1	17.7	9.4	9.8	19.1	20.2
Transformation	7.9	9.4	5.2	5.2	10.3	5.6	5.6	11.3	12.0
Total Final Consumption	7.1	7.3	3.5	3.9	7.4	3.8	4.1	7.9	8.2
Industry	4.4	4.5	2.2	2.4	4.6	2.5	2.5	5.0	5.2
Transport	0.7	0.7	0.3	0.4	0.7	0.4	0.4	0.8	0.8
Buildings	2.0	2.1	0.9	1.1	2.0	0.9	1.2	2.1	2.2

